Chicago Metropolitan Agency for Planning

The Way to Go

Congestion Pricing for Metropolitan Chicago

Presented to College of Complexes

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Transportation Sustainability: The Congestion Problem

Urban Congestion Report Comparison, August - October, 2007

Measure	Chicago Region	Chicago Rank	National Composite	Explanation of Measurement
Congested Hours	13.04	Worst	6:12	Hours per day when 20% of system is congested
Travel Time Index	1.49	Worst	1.348	Ratio of peak-period travel time to free-flow travel time
Planning Time Index	2.07	Second Worst	1.755	Factor showing extra time to set aside for on-time arrivals because of travel time variation

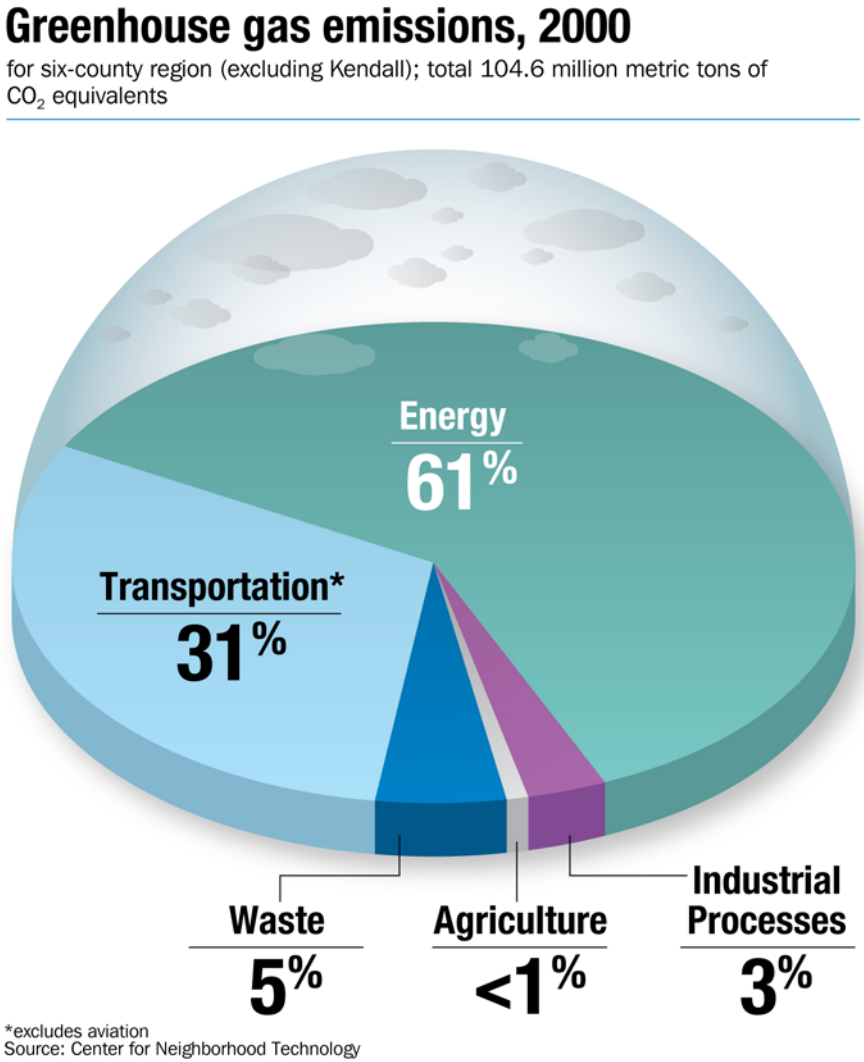
Source: USDOT *Urban Congestion Report*, August - October, 2007, National Executive Summary, Final.

Transportation Sustainability: The Cost of Congestion

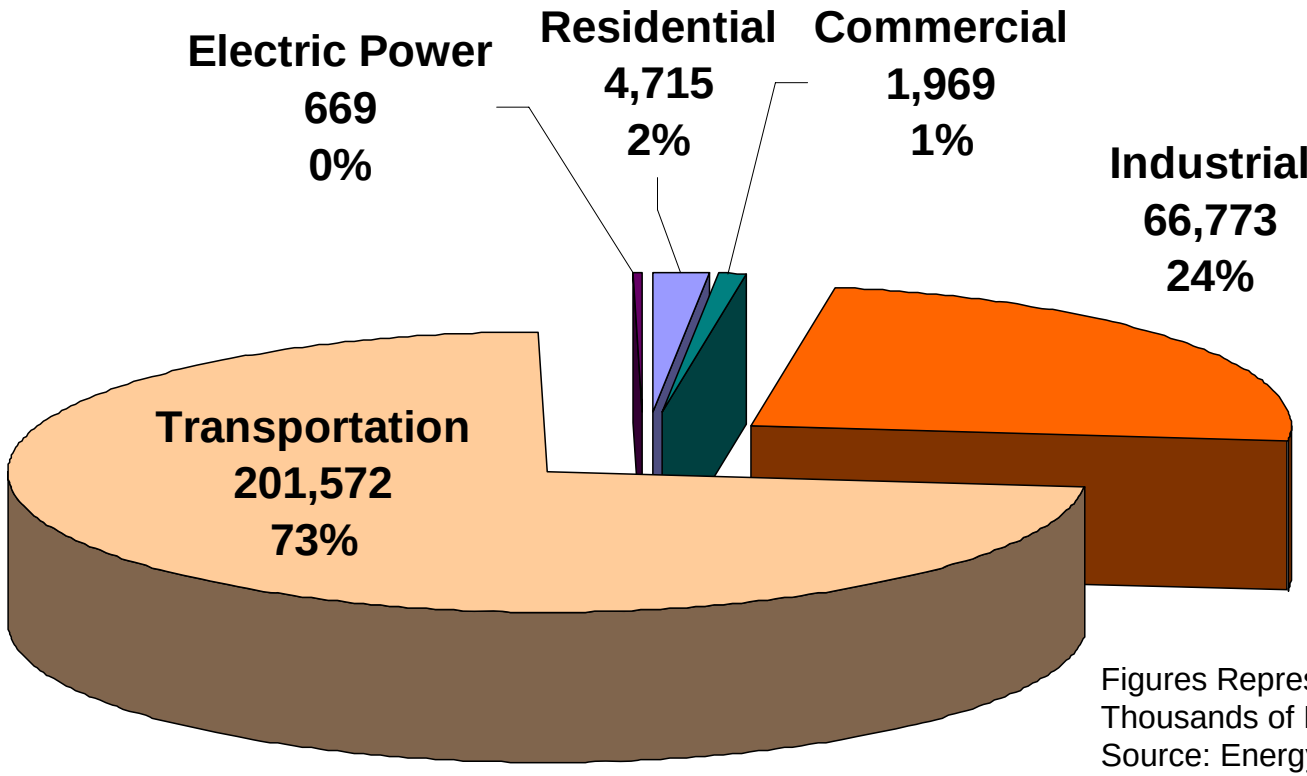
Cost Category	Annual Estimated Cost ($ Billions)
Time Delays/Excessive Fuel Costs	4.3
Productivity Losses	2.1
Environmental Losses	0.4
Safety Losses	0.5
Costs of Cargo Delays	0.2
Unreliability Losses	2.1
Airline and Railroad Congestion Costs	1.4
Total Chicago Congestion Costs	11.0

Wells, USDOT

Transportation Sustainability: Greenhouse Gases

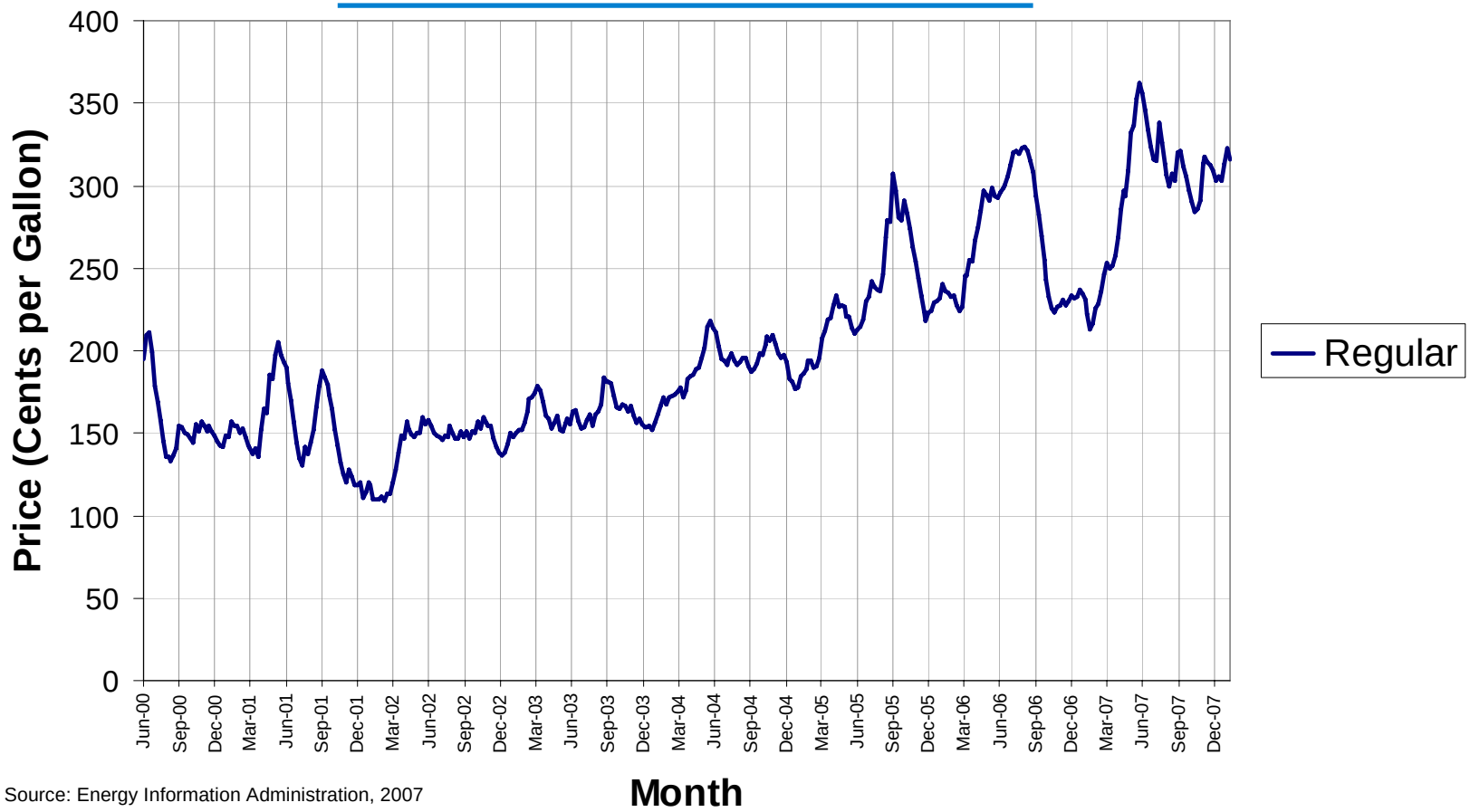


Transportation Sustainability: Illinois Petroleum Consumption, 2005



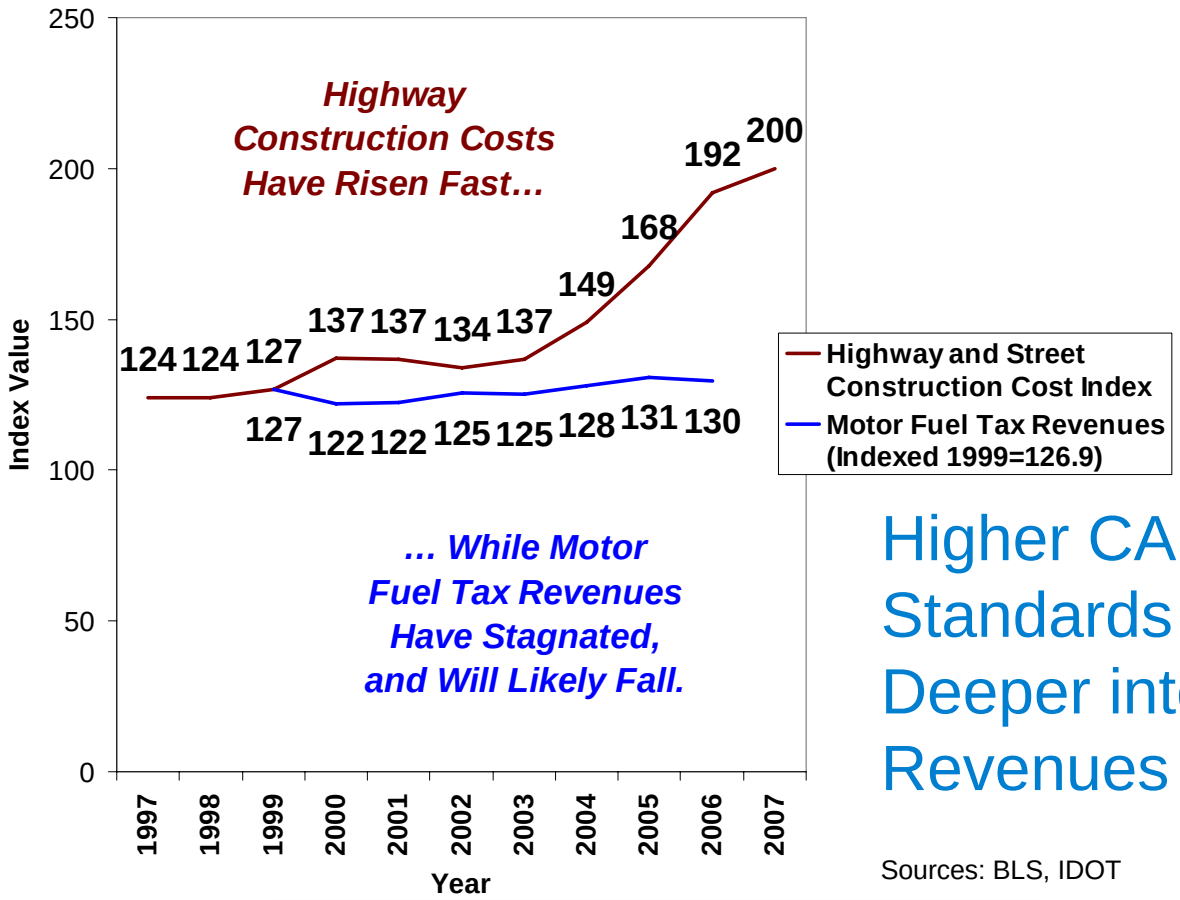
Figures Represent Thousands of Barrels.
Source: Energy Information Administration

Weekly Retail Gasoline Prices, Regular Grade, Chicago, 2000-2007



Source: Energy Information Administration, 2007

Transportation Sustainability: Higher Costs and Flat Revenues



Higher CAFE Standards Will Cut Deeper into Future Revenues

Sources: BLS, IDOT

2030 Regional Transportation Plan Capital Element Update

Recommendation Category	Typical Projects	Capital Allocation
Management	Management and Operations, Maintenance, Reconstruction	$47B (72%)
Committed	Projects Under Construction	$4B (5%)
Strategic	Rail Freight, Bicycle/Pedestrian, Arterial, Transit	$5B (8%)
Major Capital	New Transportation Corridors, System Additions	$9B (15%)
Total		$65B

Transportation Sustainability: The Cost of Construction

Red Line: $282 Million;

Dan Ryan Expressway: $975 Million

Photo: IDOT

Transportation Sustainability – A Summary of Some Key Challenges

- Too many cars for available infrastructure
- Congestion over a Large Area, for Substantial Parts of the Day, with High Economic Costs
- Contribution to Greenhouse Gas Emissions
- Use of Ever Scarcer Petroleum, with Recent Higher Prices
- Falling Revenues for Some Key Fund Sources
- Escalating Construction Expenses

Pricing Strategies for Successful Transportation Management

We will not succeed in attaining our goals for regional mobility and accessibility if we only manage the supply of transportation.

Likewise, travel demand management is not likely to succeed if it operates only by trying to attract people to alternate modes of transportation. We need to manage demand like any business – by using the **price mechanism.**

Pricing Strategies for Successful Transportation Management

"If fees must be raised, they must be raised strategically to improve the performance of the transportation system. Users must be given incentives for better travel decisions."

- Randy Blankenhorn, CMAP Executive Director

Pricing Strategies for Successful Transportation Management

- Congestion Pricing Works
- Enabling Technology
- Transportation Funding Quandary
  - Rapidly Rising Costs
  - Slowly Rising Revenues
- Implementation Successes
  - International: Stockholm, London, Singapore
  - Domestic: SR 91 Express Lanes, Minnesota and Colorado HOT Lane Conversions
- USDOT Urban Partnerships

How did we end up here?

Chartered Private Turnpike Companies:

- 1792: Philadelphia – Lancaster Turnpike (Belmont-Ardmore-Bryn Mawr-Rosemont-Devon-Berwyn)
- By 1808: 3000 miles of toll roads + 21 bridges in New York State
- By 1828: 3000 miles of toll roads in PA
- By Mid-19th Century: Hundreds of Companies Operating Thousands of Miles of Road

Source: Linda Spock, Tolling Practices for Highway Facilities

How Did We End Up Here?

- From Mid-19th Century: Substantial Railroad Development Led to Decreased Road Profitability.
- Roads Were Abandoned and Companies Dissolved
- State and Local Authorities Assumed Control
- Roads Fell into Disrepair

Source: Linda Spock, Tolling Practices for Highway Facilities

19th Century Toll Gates, clarelibrary.ie

How Did We End Up Here?

- 1890's: Bicycle Boom Brought "Better Roads Movement"
- Federal Role Demanded: OK with US Supreme Court 1907
- Federal-Aid Road Act: 1916
- Federal Highway Act: 1921
- Tolls Prohibited on Federally-Assisted Roads

Source: Linda Spock, Tolling Practices for Highway Facilities

How Did We End Up Here?

- 1-2 cent per gallon federal tax to general revenues 1932-1956
- 3-4 cent per gallon federal tax to highway account 1956-1983
- 9 cent per gallon federal tax to highway and mass transit accounts 1983-1990
- Some of higher tax to general revs 1990-1996.
- Current 18.4 cents per gallon; 15.44 cents to highway account; 2.86 to mass transit account
- + 19 cents per gallon MFT for Illinois Road Fund.
- Illinois 6.25% state sales tax on gasoline goes to general fund.

Source: Buechner, ARTBA

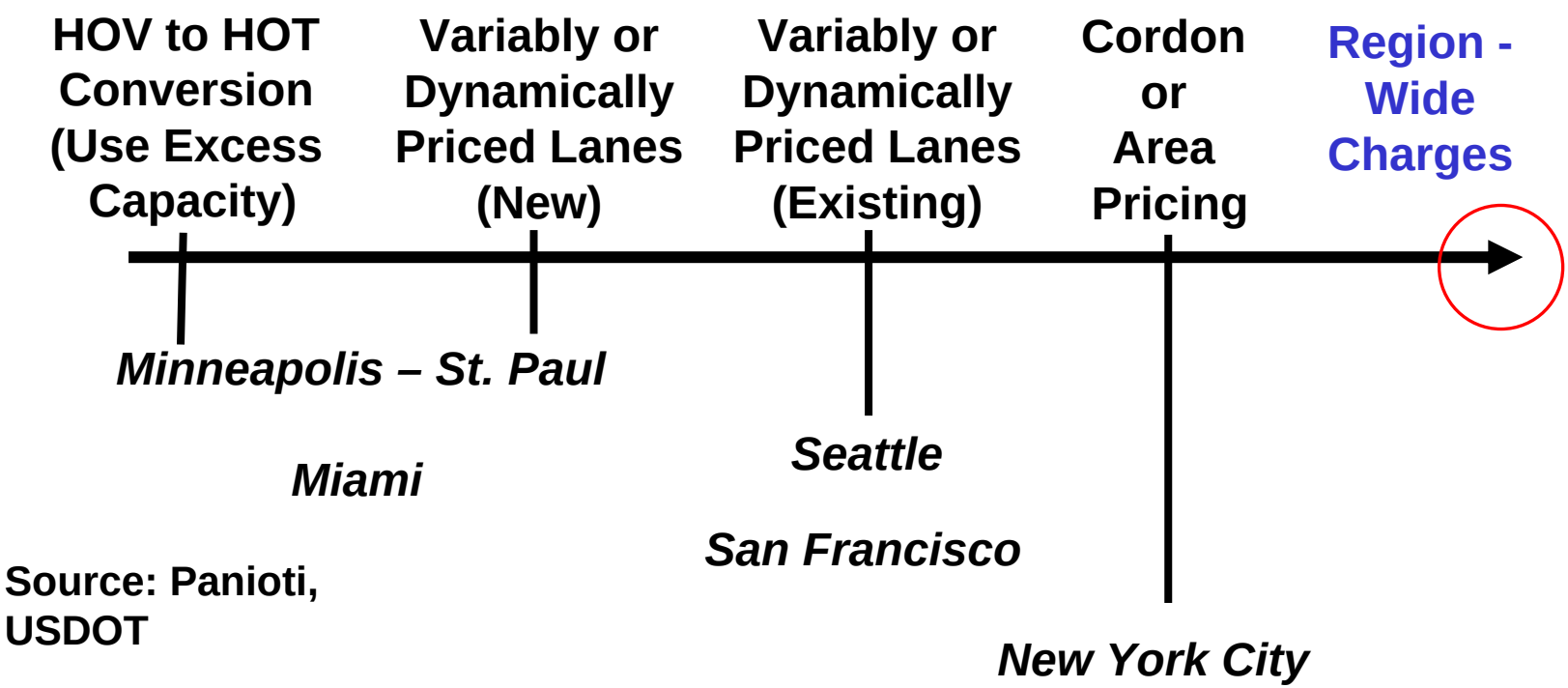
How Did We End Up Here?

- With 20th century technology, the gas tax was easier to collect than alternatives
- Federal tax was particularly controversial; efforts to raise the tax have been bitterly opposed.
- Real gas tax rates are now historically low.

Pricing Strategies for Successful Transportation Management

- Road Pricing
  - Managed Lanes
  - Managed Freeways
  - Area/Cordon
- Parking
- Non-Auto Modes
  - Rail Transit
  - Commercial Air Travel

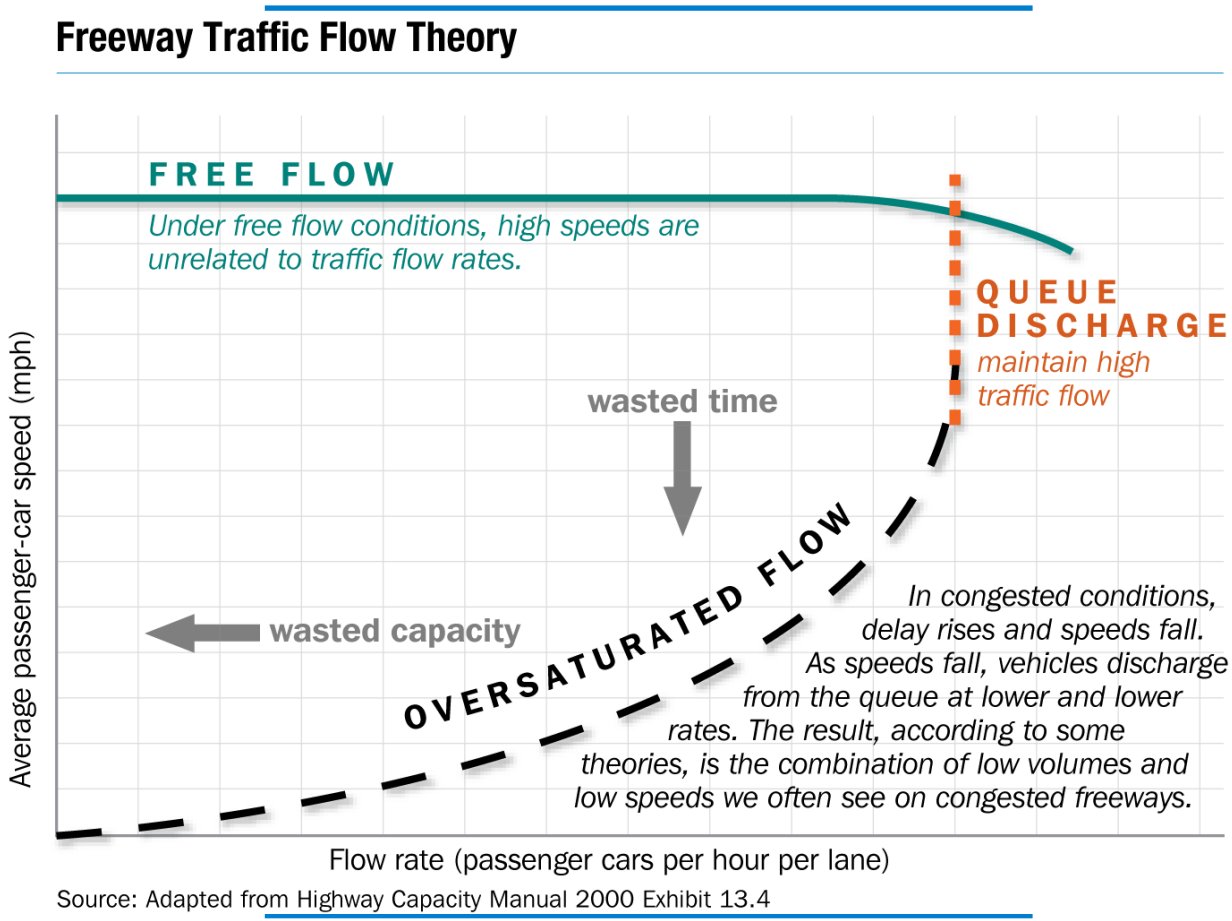
“Congestion Pricing – The Progress”



Road Pricing: Setting Prices

- Dynamic
  - Responsive to Real-time Conditions
  - Assumes Real-Time Alternative Mode, Route Choices
  - Prices Vary by Facility and Time of Day
- Variable
  - Vary by Facility and Time of Day
  - Predictability for Users
- Static
  - Same Price for All Time Periods
  - Unresponsive to Demand

Road Pricing: Setting Prices



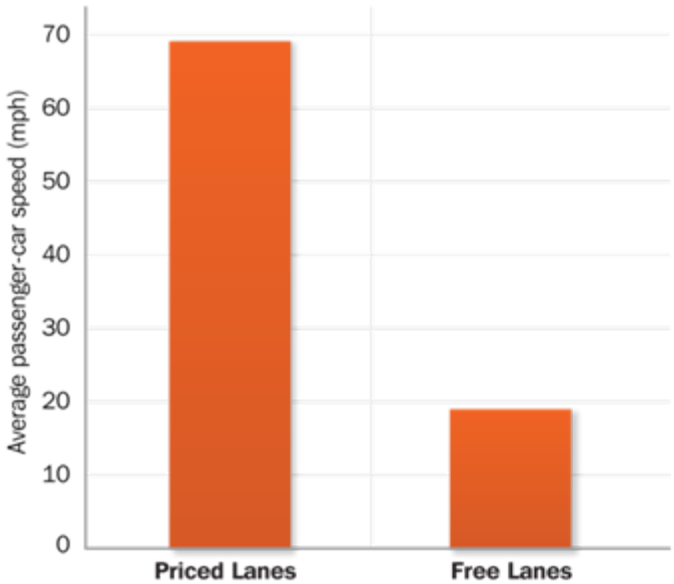
Road Pricing: SR 91 Impacts

Comparison of Speeds and Vehicle Throughput

on lanes with and without congestion pricing, State Route 91, California

Speed

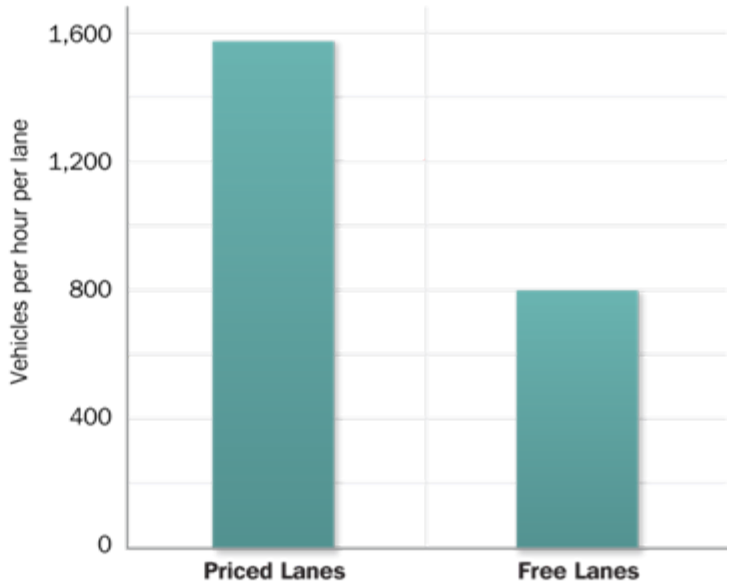
Traffic speeds during rush hours on State Route 91



Source: USDOT's *Congestion Pricing Primer*

Throughput

Peak period vehicle throughput during the hour with heaviest traffic on State Route 91



Source: USDOT's *Congestion Pricing Primer*

Corridor and Area Pricing

Effective Cordon Prices in a Grid System Like Chicago May Be a Challenge in All but the Smallest Areas.

Cordon and Area Pricing Technology

- Transaction cost for pricing strategies has been reduced by technologies (Radio Frequency ID and Dedicated Short-Range Communications – DSRC/RFID at 900MHz)
- Future of DSRC at 5.9GHz: 25 Mb/sec at 1KM vs current 250 Kb/sec at 10M?

Parking Prices: Essential Element of Parking Management

Principles:

- Consumer Choice
- User Information
- Shared Parking
- Efficient Utilization
- Flexibility
- Prioritization
- Pricing
- Peak Management
- Quality
- Comprehensive Analysis

Benefits:

- Facility Cost Savings
- Improving Service Quality
- Flexible Location & Design
- Revenue Generation
- Less Land Consumption
- Mobility
- Economic Development
- Supports Walking Scale
- Livable Communities
- Equity

Source: Litman, Parking Management, 2007

Pricing Parking for Transportation Management

Fit Prices into Current Regulatory Environment:

- On-Street vs. Off-Street
- Length of Stay
- Time of Day
- Consider Traffic Flow and Traffic Calming Needs
- Special Considerations for Disabled and Freight Users
- Premium for Convenience

Pricing Parking for Transportation Management

Mechanisms and Institutions for Parking Pricing:

- Direct Metering (On or Off-Street)
- Municipal Garage Fees
- Parking Revenue Taxes (Typically Off-Street)
- Parking Space Levies (Typically Off-Street)
- “Parking Meter Zone” or “Parking Benefit District”

Making Congestion Pricing Work: Expected Effects

Expected Congestion Pricing Effects:

- Changes in time-of-day of trips
- Changes in trip routes to other freeways and to arterials
- Changes in trip destinations to closer attractions
- Changes in trip mode to ridesharing, walking, and transit
- Better highway operations because of lower congestion (more throughput and higher speed)

Making Congestion Pricing Work: Need for Alternatives

Congestion Pricing Works Only when Viable Alternatives Are Available:

- Walking and Bicycling for Local Trips
- Transit for Local and Regional Trips
- Strong Road System with Lots of Connectivity
- Alternative Routes for Through-Travelers
- Strategic Highway Capacity

The Way to Go

Congestion Pricing for Metropolitan Chicago

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